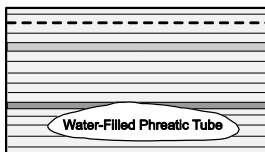


NEAR-SURFACE EVOLUTION

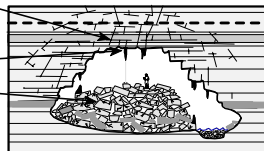
Phreatic Zone



Phase 1: Formation of phreatic tube

Vadose Zone

Cave-ceiling crackle breccia
Breakout dome
Chaotic breakdown breccia



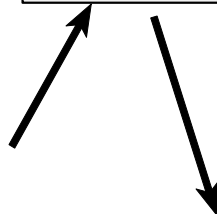
Phase 2: Cave-ceiling collapse and further dissolution

~10 meters
~30 feet

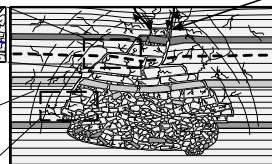
Transported breccia and sediment

BURIAL EVOLUTION

Burial cave-ceiling crackle breccia
Crackle mosaic breccia
Burial cave-wall crackle breccia
Burial chaotic breakdown breccia



Phase 3: Chamber collapse and mechanical compaction



Sag and faults

~10 meters
~30 feet

Further mechanical compaction



Phase 4: Continued brecciation of blocks and slabs



Rebrecciated chaotic breakdown breccia

Figure 1. Evolution of a cave passage with burial. Modified from Loucks (1999).

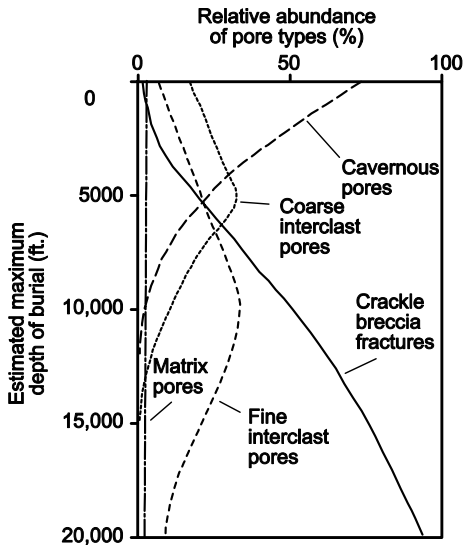


Figure 2. Evolution of pore types with burial. Modified from Loucks (1999).

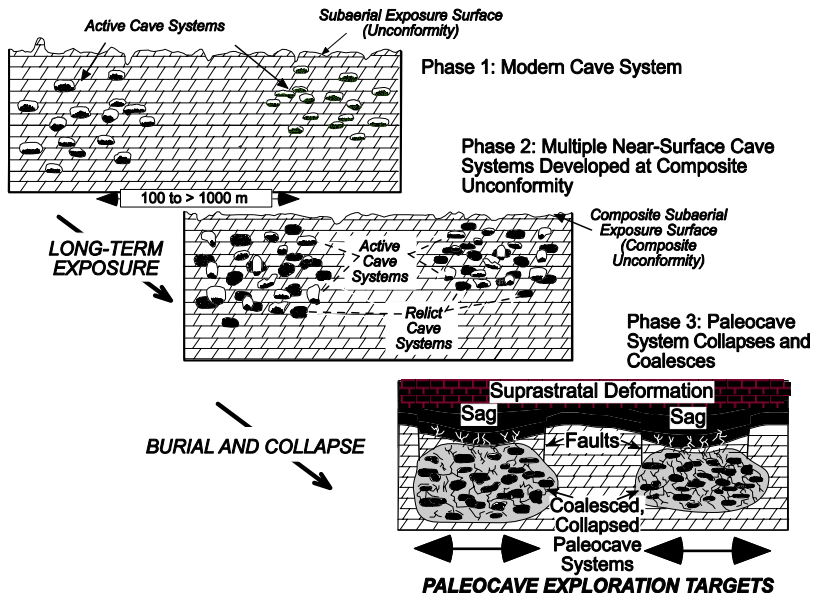


Figure 3. Schematic diagram showing stages of development of a coalesced, collapsed-paleocave system. Multiple cave-system development at a composite unconformity may be necessary in order to produce a high density of passages. As the multiple-episode cave system subsides into the deeper subsurface, wall and ceiling rocks adjoining open passages collapse and form breccias that radiate out from the passage and intersect with fractures from other collapsed passages and older breccias within the system. The collapsed-paleocave systems are prime exploration targets. Modified from Loucks (1999).